

Remarks

The Office Action mailed April 16, 2010 has been carefully reviewed and the foregoing amendment has been made in consequence thereof.

The Commissioner is hereby authorized to charge the fee of \$130.00 for a one-month extension and any additional fees in connection with this Amendment to Deposit Account Number 012384 in the name of ARMSTRONG TEASDALE LLP.

Claims 1 and 3-11 are now pending in this application. Claims 1 and 3-10 stand rejected. Claim 3 stands objected to. Claim 2 has been canceled. Claim 11 is newly added. Applicants thank the Examiner for the indication of allowable subject matter in Claims 9-10. No additional fee is due for newly added Claim 11.

The objection to Claim 3 due to an informality is respectfully traversed. Applicants have amended Claim 3 to address this issue.

For the reasons set forth above, Applicants request that the objection to Claim 3 be withdrawn.

The rejection of Claims 1 and 3-6 under 35 U.S.C. § 103(a) as being unpatentable over “Very Low Bit-Rate Video Coding Based on Matching Pursuits” by Ralph Neff and Avidenh Zakhor (hereinafter referred to as “Neff”) in view of “Redundancy-Driven A Posteriori Matching Pursuit Quantization” by Pascal Frossard, Pierre Vandergheynst, and Murat Kunt (hereinafter referred to as “Frossard”) is respectfully traversed.

Neff describes a video compression algorithm that uses a matching-pursuit based motion residual coder. Notably, Neff does not describe or suggest approximating predicted frames by geometric transformations of the atoms describing the previous frame, wherein the geometric transformations include translations, anisotropic dilations, and rotations.

Frossard describes matching pursuit coding. Matching pursuit elements (i.e., coefficients and dictionary indexes) are quantized to reduce an overall size of the signal representation.

Claim 1 recites a video coding method of exploiting temporal redundancy between successive frames in a video sequence, comprising the steps, “wherein following predicted frames, called P-frames, are approximated by geometric transformations of the basis functions describing the previous frame, wherein the geometric transformations include translations, anisotropic dilations, and rotations, the parameters of the geometric transformation are quantized, entropy coded and sent to a decoder in order to reconstruct the predicted frames.”

Applicants respectfully submit that no combination of Neff and Frossard describes or suggests a video coding method as is recited in Claim 1. More specifically, no combination of Neff and Frossard describes or suggests approximating P-frames using geometric transformations of the basis functions describing the previous frame. Rather, in contrast to the recitations of Claim 1, Neff describes replacing a block-DCT (discrete cosine transform) residual coder with a new coding method that includes expanding a motion residual signal using matching pursuits, and Frossard describes quantization of matching pursuit elements to reduce the bandwidth needed to transmit them.

Claim 1 recites that “predicted frames, called P-frames, are approximated by the geometric transformations of the basis functions describing the previous frame”. Neff’s description of applying matching pursuit to a motion residual does not anticipate this recitation. It is asserted on Page 4 of the instant Office Action that Neff describes this claim element in Section III, B, titled, Matching-Pursuit Residual Coding. Applicants respectfully traverse this assertion. Neff states on Page 160:

“After the motion prediction image is formed, it is subtracted from the original image to produce the motion residual. This residual image is coded using the matching pursuit technique introduced in Section II.”

Applicants respectfully submit that rather than describing approximating a P-frame using geometric transformations of basis functions that describe the previous frame, Neff describes applying matching pursuit to a motion residual. Motion residuals and geometric transformations of basis functions are not synonymous. It is stated in Paragraph 24 of the instant application:

“Note that the figure includes an optional step, that encodes the motion residuals (or texture), which is the difference between the

original frame and the one reconstructed using the atoms. This encoding can be used to further increase the quality of the decoded image up to a lossless reconstruction.”

Furthermore, dependent Claim 6 recites that optional step, “Video coding method according to claim 1, wherein the method is used together with a residual frame based texture codec that encodes the differences between the original frames and the ones reconstructed using the compensated atoms.” Moreover, by amending Claim 1 to recite “wherein the geometric transformations include translations, anisotropic dilations, and rotations”, Applicants are further differentiating the recitations of Claim 1 from teachings related to motion residuals.

Accordingly, Applicants respectfully submit that Claim 1 is patentable over the cited prior art.

Claims 3-6 depend from independent Claim 1. When the recitations of Claims 3-6 are considered in combination with the recitations of Claim 1, Applicants submit that dependent Claims 3-6 likewise are patentable over the cited prior art.

For at least the reasons set forth above, Applicants respectfully request that the Section 103(a) rejection of Claims 1 and 3-6 be withdrawn.

The rejection of Claims 7 and 8 under 35 U.S.C. § 103(a) as being unpatentable over Neff in view of Frossard and further in view of Official Notice is respectfully traversed.

Neff and Frossard are described above.

Official Notice is cited for teaching that atoms of an I-frame are computed from quantized frames at the encoder and decoder and are not transmitted. Official Notice is also cited for teaching that atoms are re-computed after each quantized frame at the encoder and decoder and replace the previous prediction. Applicants respectfully traverse the Official Notice. Moreover, Official Notice is not cited for teaching approximating predicted frames by geometric transformations of the atoms describing the previous frame, wherein the geometric transformations include translations, anisotropic dilations, and rotations. As explained above, neither Neff nor Frossard, considered alone or in combination, describe or suggest such a step.

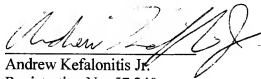
Independent Claim 1 is recited above. Claims 7 and 8 depend from independent Claim 1. When the recitations of dependent Claims 7 and 8 are considered in combination with the recitations of Claim 1, Applicants respectfully submit that Claims 7 and 8 likewise are patentable over Neff in view of Frossard and further in view of Official Notice.

For at least the reasons set forth above, Applicants respectfully request that the Section 103(a) rejection of Claims 7 and 8 be withdrawn.

Newly added Claim 11 depends from independent Claim 1. When the recitations of Claim 11 are considered in combination with the recitations of Claim 1, Applicants submit that Claim 11 likewise is patentable over the cited art.

In view of the foregoing amendments and remarks, all the claims now active in this application are believed to be in condition for allowance. Reconsideration and favorable action is respectfully solicited.

Respectfully Submitted,



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